

REMARKS

In the present Amendment, Claim 1 has been amended to recite that the substituents for aryl group (A) and heterocyclic group (B) are selected from “an alkyl group, alkoxy group, alkylthio group, aryl group, aryloxy group, arylthio group, substituted amino group, substituted silyl group, substituted silyloxy group, or monovalent heterocyclic group.” Section 112 support for this amendment may be found, for example, at page 25, lines 6-8 of the specification. Dependent Claim 4 has been amended consistent with the amendment to Claim 1. Claim 6 has been amended to correct a typographical error at the end of the claim. In addition, Claims 1 and 7 have been amended to clarify that “the highest occupied molecular orbital (HOMO) of the arylamine compound calculated by AM1 method which is a semi-empirical molecular orbital method, is selected.” No new matter has been added, and entry of the Amendment is respectfully requested.

Entry of the amendment after final is proper because Applicants are merely deleting members of a previously-considered Markush group, and clarifying other claim language to address a §112, second paragraph concern raised by the Examiner. The amendments are not believed to raise new issues or to require further consideration or search.

Upon entry of the Amendment, Claims 1 and 3-24 will be pending.

In paragraph No. 4 of the Action, Claims 1, 3, 5, 7, 8 and 11-24 have been rejected under 35 U.S.C. § 112, second paragraph, as allegedly being indefinite.

Claims 1 and 7 recited that “one of the highest occupied molecular orbitals … is arbitrarily selected, in making a certain calculation.” The Examiner expressed concern that it is not clear if the results of the calculations will be the same regardless of which one of the highest occupied molecular orbitals is selected.

As noted, Claims 1 and 7 have been amended to address the Examiner's concern.

Accordingly, reconsideration and withdrawal of the § 112 rejection of Claims 1, 3, 5, 7, 8 and 11-24 are respectfully requested.

In paragraph No. 6 of the Action, Claims 1, 3, 5-9 and 11-24 have been rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over Kreuder et al., U.S. Patent No. 5,814,244 ("Kreuder").

Applicants submit that this rejection should be withdrawn because Kreuder does not disclose or render obvious the presently claimed polymer compound.

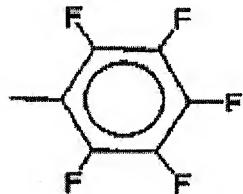
The polymer compound of the present invention comprises at least one repeating unit selected from the group of repeating units shown by formula (1) or formula (2) as defined in claim 1. The polymer compound comprises a repeating unit containing nitrogen atoms in the main chain, and specific aryl group (A) or heterocyclic group (B) branching from N. The light-emitting device using the polymer has improved lifetime and exhibits good characteristics.

Kreuder discloses an electroluminescence material comprising one or more polymers represented by structural units of formula (I). See, abstract and col. 2, lines 20 to 38.

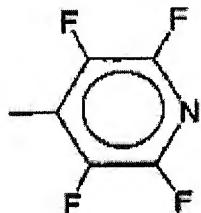
The Examiner asserts that Kreuder provides for polymers comprising a repeating unit of present formula (1) wherein $a = 1$ and $b = 0$. The Examiner asserts that a polymer according to Kreuder in which n is 1 and each of Ar^2 and Ar^4 represents a group of the first formula at col. 6, lines 25-31 is a polymer comprising a repeating unit of present formula (1) in which E_3 and E_1 each represents heterocyclic group (B) as defined in present Claim 1. The Examiner further asserts that a polymer of formula (I) according to Kreuder in which n is 1 and each of Ar^2 and Ar^4 represents a group of the second formula at col. 6, lines 25-31 is a polymer comprising a

repeating unit of present formula (1) in which E_3 and E_1 each represents aryl group (A) as defined in present Claim 1 and further defined in present Claim 3.

Kreuder discloses, as the aryl group branching from N, the group of the second formula at column 6, lines 25-31, which has 5 fluorine substituents as shown below:



Kreuder discloses, as the heteroaryl group branching from N, the group of the first formula at column 6, lines 25-31, which has 4 fluorine substituents as shown below:



As noted, Claim 1 has been amended to delete a halogen atom (which includes fluorine) from the Markush groups of substituents for the aryl or heteroaryl group.

Accordingly, the present claims are not obvious over Kreuder. Reconsideration and withdrawal of the §103(a) rejection of Claims 1, 3, 5-9 and 11-24 based on Kreuder '244 are respectfully requested.

In paragraph No. 7 of the Action, Claims 1 and 3-24 have been rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over Woo et al., U.S. Patent No. 6,309,763 ("Woo").

Applicants submit that this rejection should be withdrawn because Woo does not disclose or render obvious the presently claimed polymer compound.

Woo discloses a copolymer comprising groups of formula (I) and groups from formulas (II), (III) and (IV) (abstract). The subscript "b" in Woo's repeating unit of formula (II) , (III) or (IV) may be 3 (or 0, 1 or 2). However, Woo does not teach a concrete example where b=3. Moreover, Woo does not teach the specific carbon position of the substituents as recited in present Claim 1.

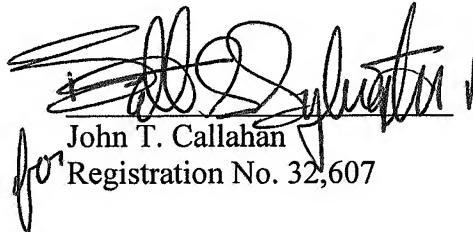
Comparative Example 1 at pages 109-110 of the present specification shows that, as an aryl group branching from N, a phenyl group having one substituent is inferior in performance as compared to a phenyl group having 3 or more substituents. The attenuation in luminance seen with Comparative Example 1 after 300 hours was much greater than that seen, for example, with Example 2. Compare the results for Comparative Example 1 at page 110, lines 1-3 with the results for Example 2 at page 109, lines 17-19.

Accordingly, the present claims are not obvious over Woo. Reconsideration and withdrawal of the §103(a) rejection of Claims 1 and 3-24 based on Woo '763 are respectfully requested.

Allowance is respectfully requested. If any points remain in issue which the Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned at the telephone number listed below.

The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account.

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